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TAXES ON ENERGY CONSUMPTION

SCHEDULED FOR A HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND AGRICULTURAL TAXATION

OF THE

COMMITTEE ON FINANCE

ON JUNE 9, 1982

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INTRODUCTION

This pamphlet provides a brief analysis of possible taxes on energy consumption. It has been prepared in connection with the hearing of the Senate Finance Committee's Subcommittee on Energy and Agricultural Taxation scheduled for June 9, 1982.

The subject of the hearing is five proposed taxes on energy consumption:

(1) an ad valorem tax on all major energy sources (oil, natural gas, coal, nuclear power, and hydroelectric power);
(2) a tax on major energy sources based on their Btu content;
(3) an oil import fee;
(4) an excise tax on U.S. oil consumption; and
(5) an increase in the taxes on gasoline and other motor fuels.

Part I of the pamphlet provides a brief description of present law. Part II describes the proposals which are the subject of the hearing. Part III discusses U.S. energy consumption patterns. Part IV is a brief analysis of a number of issues which arise in analyzing energy taxes.

I. PRESENT LAW

A. Highway Trust Fund Taxes

Several taxes on energy consumption are imposed to finance the Highway Trust Fund. There are taxes on gasoline, diesel fuel and other motor fuels equal to 4 cents per gallon (scheduled to decline to 1½ cents per gallon after September 30, 1984). There are exemptions from these taxes for certain off-highway uses and for gasohol. Other Highway Trust Fund taxes include taxes on lubricating oil, tires and tubes, tread rubber, trucks and trailers, and truck parts and accessories, as well as a use tax on heavy motor vehicles.

B. Gas Guzzler Tax

There is a tax on new passenger automobiles that fail to meet prescribed fuel efficiency standards. The tax requires greater and greater efficiency until 1986, at which time the tax will apply to cars whose fuel economy is less than 22½ miles per gallon and will be $3,850 for cars with efficiencies below 12.5 miles per gallon. The gas guzzler tax in effect for model year 1982 applies only to a very small number of car models.

C. Import Fee Authority

Under the Trade Expansion Act of 1962, the President can impose oil import fees or other import restrictions if he finds that imports threaten the nation's security. Congress may roll back such fees by passing a joint resolution of disapproval. However, this resolution can be vetoed by the President, in which case the fees he imposed would continue in effect unless the President's veto is overridden by a two-thirds vote of both Houses of Congress. Only nominal oil import fees are now in effect. However, the presidential import fee authority was used by Presidents Nixon, Ford and Carter.

D. Inland Waterways Fuel Tax

There is a tax on diesel and other liquid fuels used for commercial cargo vessels on inland or intra-coastal waterways. The present tax is 6 cents per gallon. It is scheduled to increase to 8 cents per gallon on October 1, 1983, and to 10 cents per gallon on October 1, 1985.

E. Aviation Excise Taxes

A series of taxes are imposed on aviation. These funded the Airport and Airway Trust Fund until October 1, 1980.[1] Currently, there is a 5-percent tax on domestic air passenger tickets, a 4-cents-per-gallon tax on gasoline used in general aviation, and taxes on aircraft tires and tubes.

F. Superfund Taxes

Excise taxes are imposed on crude oil and certain chemicals to fund the Hazardous Substance Response Trust Fund. The crude oil tax is 0.79 cent per barrel and is imposed on the receipt of crude oil at a U.S. refinery, the import of crude oil products and, if the tax has not already been paid, the use or export of domestically produced crude oil. The tax on certain chemicals ranges from 22 cents to $4.87 per ton.

G. Black Lung Excise Tax on Coal

There is a manufacturers excise tax on domestically mined coal (other than lignite), the revenues from which are deposited in the Black Lung Disability Trust Fund. The rate of the tax is currently the lesser of (1) $1 per ton for coal from underground mines and 50 cents per ton for coal from surface mines or (2) 4 percent of the price for which the coal is sold. These rates are scheduled to be cut in half (to the pre-1982 level) when the Black Lung Disability Trust Fund is solvent or in 1996, whichever is earlier.

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[1] During the period between July 1, 1970, and September 30, 1980, the following aviation excise taxes applied: 8-percent tax on domestic air passenger tickets; 5-percent tax on domestic air freight waybills; a $3 per person international departure tax; a 7-cents-a-gallon tax on gasoline and nongasoline (i.e., jet) fuels used by noncommercial (general) aviation; an annual aircraft use tax; and the taxes on aircraft tires and tubes.

II. POSSIBLE ENERGY TAX PROPOSALS [1]

A. Btu Tax

There could be a tax on the consumption of energy in the United States equal to a fixed amount per Btu. (A Btu, or British thermal unit, is a measure of energy content.)[2] One million Btu's are contained in 975 cubic feet of natural gas, 0.17 barrels or 7.2 gallons of crude oil, 0.04 tons of coal, or 293 kilowatt-hours of electricity. Presumably any such Btu tax would exempt renewable energy sources like solar and wind energy, and it could also be structured to exempt nonrenewable synfuels like shale oil. Because the tax would be designed to tax U.S. energy consumption, there presumably would be a rebate for fuel exports (largely coal), and the tax would be imposed on fuel imports.

B. Ad Valorem Energy Tax

A second alternative would be to impose a tax on domestic energy consumption based on the value of the fuels. (An ad valorem tax is an excise tax based on value.) Under this alternative, exactly where the fuel tax will be imposed is very important, since value is added to the fuel through the various stages of refining, processing, transportation and marketing until it is sold to the ultimate consumer. The closer to the wellhead, mine mouth or power plant a particular ad valorem tax is imposed on a fuel, the lower will be the tax on that particular fuel.

There could be a hybrid between a Btu tax and an ad valorem tax in which the tax is imposed on each energy source (oil, gas, coal, hydro and nuclear) according to Btu content, but in which the tax rates vary from one energy source to another so that they are equal to approximately the same percentage of the national average price of the energy source. For example, if the national average oil price is $30 per barrel and the rate 10 percent, there would be a $3.00 per barrel tax on all oil consumption, which would not vary according to the price of any particular barrel of oil. If the national average price of natural gas were $2.00 per thousand cubic feet, the tax rate on gas would be 20 cents, regardless of the actual price at which the gas were sold. These tax rates could change annually based on increases in fuel prices.

C. Import Fee on Oil and Petroleum Products

A fee could be imposed on imported crude oil and petroleum products. This could be done either by legislation or by the President if he finds the fee necessary to promote the nation's security. The amount of the fee could be the same on imported crude oil as on im-

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[1] The five energy tax proposals described in this part of the pamphlet are the ones listed in the Finance Committee press release, dated June 2, 1982.

[2] One Btu is the amount of energy needed to raise the temperature of one pound of water by one degree Farenheit.

ported petroleum products, or a larger fee could be imposed on imported petroleum products in order to provide tariff protection for domestic oil refiners. The fee could be a fixed amount per barrel, or it could be a percentage of the value of the oil (ad valorem). The fee itself would generate additional tax revenues, and it would lead to additional windfall profit tax revenues because it would raise the price of oil produced by domestic producers.

D. Tax on Oil Consumption

A tax could be imposed on domestic consumption of oil (both imported and domestically produced oil). This could be structured in a way similar to the superfund tax of present law, except with a rebate of the tax for exports. This tax could either be a fixed amount per barrel or a percentage of the price.

E. Tax on Gasoline and Other Motor Fuels

There could be an increase in the existing excise taxes on gasoline and other motor fuels. This could be structured simply as an increase in the present Highway Trust Fund taxes, or the additional tax could also apply to some of the uses of gasoline which are exempt under the present Highway Trust Fund taxes, such as the exemptions for off-highway uses or for gasohol. Also, the fuels taxes could be converted from a per-gallon tax to an ad valorem tax. The revenues from the additional tax could go into the Highway Trust Fund as do the present tax revenues, or could go into the general fund of the Treasury.

III. PATTERN OF U.S. ENERGY CONSUMPTION

Table 1 shows U.S. energy consumption in 1981 by source of energy and by consuming sector. The United States consumed 73.8 quadrillion Btu's (quads) of energy last year, of which 43 percent was petroleum, 27 percent was natural gas and 22 percent was coal. (These figures include the use of oil, gas and coal to generate electricity.) The residential and commercial sector used 35 percent of this energy, the industrial sector 39 percent, and the transportation sector 26 percent.

Table 2 shows how energy use has declined in recent years. Between 1950 and 1973, energy consumption rose at an annual rate of 3.5 percent. This growth can be explained entirely by the expansion of the economy: energy consumption per dollar of GNP fell at an annual rate of 0.3 percent over the whole period. (Actually energy consumption per dollar of GNP declined through the 1950's and early 1960's, rose in the late 1960's and declined again in the early 1970's.) After the 1973 oil shock, the growth rate of energy consumption declined to 0.9 percent, and the decline in energy use per dollar of GNP accelerated to a rate of 1.7 percent. Since the 1979 surge in energy prices, the use of energy has declined at a rate of 1.9 percent, and energy use per dollar of GNP has declined at a rate of 3.4 percent.

Petroleum consumption, also shown in table 2, rose faster than total energy consumption between 1950 and 1973 and also rose faster than GNP. After 1973, oil consumption fell per dollar of GNP, but it continued to rise at a rate of 1.7 percent in absolute terms. Since 1978, however, petroleum consumption has fallen more rapidly than overall energy consumption. Per dollar of GNP, oil consumption has fallen at a rate of 7.1 percent in the last three years.

Table 3 shows the nation's dependence on petroleum imports since 1973. Between 1973 and 1977, imports rose from 6.3 million barrels per day to 8.8 million barrels per day, representing close to half domestic oil consumption that year. Since then, imports have fallen to 6.0 million barrels per day; however, they still represent a large, fraction of oil consumption than they did prior to the 1973 Arab oil embargo.

Table 1.—U.S. Energy Consumption, 1981

Item	Quadrillion Btu's	Percent of total
Source of energy:		
Coal	16.0	21.7
Natural gas	19.8	26.8
Petroleum	32.0	43.4
Hydroelectric power	3.0	4.0
Nuclear electric power	2.9	3.9
Total	73.8	100.0
Consuming sector:		
Residential and commercial	25.7	34.8
Industrial	28.9	39.1
Transportation	19.2	26.0
Total	73.8	100.0

Table 2.—Annual Average Growth Rate of U.S. Energy Consumption for Selected Periods

Period	Energy consumption (percent)	Energy consumption per dollar of GNP (percent)	Oil consumption (percent)	Oil consumption per dollar of GNP (percent)
1950–73	3.5	−0.3	4.2	0.4
1973–78	.9	−1.7	1.7	−1.0
1978–81	−1.9	−3.4	−5.5	−7.1

Table 3.—Petroleum Imports, 1973–81

Year	Imports (million barrels per day)	Imports as percent of oil consumption
1973	6.3	36.2
1974	6.1	36.7
1975	6.1	37.1
1976	7.3	41.9
1977	8.8	47.8
1978	8.4	44.4
1979	8.5	45.7
1980	6.9	40.5
1981	6.0	37.3

IV. ISSUES

A. Effect on Energy Policy

Since the 1973 oil embargo, it has been generally accepted that the United States should try to reduce its dependence on oil imports. Excessive dependence on oil imports threatens national security, and the transfer of wealth from oil consumers to foreign oil producers because of the sharp rise in oil prices has had serious implications for both the standard of living of U.S. consumers and the stability of the world economy. Some argue that reducing U.S. oil imports would cause world oil prices to fall. Moreover, a case can be made that Congress should try to discourage use of forms of energy other than oil as well. There appear to be environmental problems associated with the use of coal, and regulations keep natural gas and electricity prices well below the marginal costs of producing these sources of energy.

A tax that raises the prices of energy to consumers can be expected to reduce U.S. energy consumption. During the debates on energy policy in the 1970's, there was a divergence of views on the extent to which energy consumption, especially oil consumption, would respond to price changes. However, the reductions in energy consumption in recent years appear to have settled the argument in favor of those who believed that energy consumers would respond to price signals. For example, between 1978 and 1981, the price of gasoline rose 50.6 percent more than overall consumer prices, and gasoline consumption per dollar of GNP fell by 15 percent. The price of heating oil rose by 76 percent relative to overall consumer prices, and distillate fuel consumption per dollar of GNP fell by 22 percent. (Distillate fuel includes not only home heating oil, but also diesel fuel for cars and light fuel oil used in industry.) If higher prices are maintained for a longer period of time, still more conservation can be expected as people buy more fuel efficient cars and make investments in ways to conserve energy at home. Industrial energy conservation has been especially impressive: since 1973, industrial use of energy has declined by 9.5 percent while industrial production has risen by 20 percent.

Also, higher prices received by oil producers can be expected to encourage additional oil drilling. Between 1973 and 1981, oil and gas drilling (as measured by the number of feet drilled) increased by 165 percent, largely in response to higher oil and gas prices.

The various energy tax proposals would have different impacts on energy production and consumption. An oil import fee would raise the price of oil paid by consumers, thereby encouraging conservation and conversion from oil to other fuels. It would also raise the price of domestically produced oil, which would increase the incentives of producers to produce such oil to the extent these additional price increases are not paid as windfall profit tax or State severance tax. (On

average, the windfall profit tax would absorb about half of any additional revenues to domestic producers resulting from higher prices. For newly discovered oil, however, the windfall profit tax rate in 1983 will be 25 percent, and it will decline to 15 percent by 1986.) An import fee which had a higher rate on imports of petroleum products than on crude oil imports would have the further effect of giving domestic oil refiners an advantage over foreign oil refiners, which would increase the percentage of petroleum products refined in the United States. However, the higher fee on petroleum products could result in further increases in consumer prices.

A tax on oil consumption, applied to both domestically produced and imported oil, could be expected to have approximately the same impact on consumers as an oil import fee: in each case consumer prices would rise by approximately the amount of the fee or tax. However, the oil consumption tax would not provide any incentives for additional domestic production.

A gasoline tax would raise the price of gasoline paid by consumers, which would encourage people to drive less and to buy more fuel efficient cars. Because the conservation achieved by a higher gasoline tax would only occur with respect to one use of energy (transportation), the gasoline tax could be a less efficient way of encouraging conservation than a tax applied to all uses of oil because it would forego less painful means of conserving products other than gasoline.

A tax on all energy sources, either a Btu tax or an ad valorem energy tax, would encourage conservation of all energy sources subject to the tax. However, it would not be as effective in encouraging conversion from the use of oil to the use of other energy sources as would the other options because these other energy sources would be taxed as well. Because the price of energy varies from one source to another, a per-Btu tax would affect the various sources of energy differently than an ad valorem tax. Because coal has a low value per Btu, it would bear less of a burden under an ad valorem tax than under a per-Btu tax, as would natural gas, whose price is kept artificially low through price controls.

B. Regional Impact

Another issue is the extent to which taxes on energy consumption would fall unevenly across the regions of the United States. Because the amount of energy and the mix of energy sources consumed vary from State to State, an energy tax would not raise the same revenue per person in every state. For example, a Btu tax on major fuels would raise more revenue per capita in States where energy consumption per capita is above the national average and less revenue in States where consumption is below average.

In order to analyze the issue, the staff has estimated the geographic distribution of energy taxes under a Btu tax on major energy sources (coal, hydropower, natural gas, nuclear power and oil), an ad valorem tax on energy sources, a gasoline tax, an oil tax (with and without a home heating oil exemption) and a combined oil and gasoline tax. For comparability, the tax rates were set to raise the same total revenue ($100 per capita) under each tax variation. Generally, State energy consumption data were used to allocate the total revenue to the States.

However, revenue raised from one-half the energy consumed by businesses was allocated to States according to personal income on the assumption that half of the effect of these taxes would be reflected in higher prices for consumer goods, the purchase of which is related to personal income, and that half is reflected in lower wages and profits for workers and businesses in the State where the energy is used.

The estimated per capita energy tax in each State is shown in table 4. For example, under a gasoline tax, the per capita tax attributed to Alabama would be $104; that is, slightly higher than the national average of $100.

The last line in table 4 shows an index number that indicates the estimated geographic unevenness of the various possible energy taxes. This index number would be zero if the same per capita tax were attributed to every State. However, none of the proposals would achieve that result. The index number has been scaled so that it equals 100 for a Btu tax on major fuels, the proposal for which geographic disparity appears the greatest among the analyzed proposals.

These computations indicate that regional disparities would be relatively large under a Btu tax on major fuels or a gasoline tax, and smaller under an ad valorem tax on major fuels or an oil tax (with or without a home heating oil exemption). Regional disparities appear to be the smallest under a combined oil and gasoline tax in which the ratio of tax rates is approximately $1 per barrel of oil to 1 cent per gallon of gasoline.

It should be noted that the numbers in table 4 are based on several arbitrary assumptions. First, only half of business use of energy is allocated to the State where the energy is consumed. Second, it is assumed that a tax on any given fuel does not raise the price of competing fuels (e.g., an oil tax does not raise the price of coal or natural gas). Making different assumptions could change the results.

Table 4.—Geographic Distribution of Possible Energy Consumption Taxes

State	Per capita tax in State as percentage of per capita tax nationwide					
	Btu tax on major fuels	Ad valorem tax on major fuels	Gasoline tax	Oil tax (heating oil exempt)	Oil tax	Oil tax and [1] gasoline tax
Alabama	109	103	104	89	85	94
Alaska	171	170	95	182	180	170
Arizona	90	89	106	93	89	92
Arkansas	96	104	109	118	113	109
California	89	93	103	104	99	97
Colorado	102	96	107	96	92	100
Connecticut	94	107	101	112	125	112
Delaware	101	112	104	161	160	128
District of Columbia	79	82	74	98	99	86
Florida	83	93	104	119	114	104
Georgia	89	89	111	92	88	96
Hawaii	82	97	75	151	143	119
Idaho	96	108	110	91	95	103
Illinois	111	105	97	101	101	102
Indiana	118	105	105	100	104	107
Iowa	102	102	110	103	102	108
Kansas	123	113	111	112	107	110
Kentucky	100	88	101	83	81	89
Louisiana	158	134	99	124	118	111
Maine	92	115	98	104	120	120
Maryland	89	93	96	102	103	97
Massachusetts	87	100	85	117	128	111
Michigan	102	96	104	93	94	96
Minnesota	102	102	104	92	97	103

Mississippi	84	93	98	120	114	105
Missouri	100	95	110	96	94	102
Montana	126	133	124	107	107	117
Nebraska	109	111	110	106	104	108
Nevada	124	119	133	129	125	127
New Hampshire	83	96	96	103	116	111
New Jersey	87	96	93	106	111	104
New Mexico	112	101	118	99	94	103
New York	85	92	73	96	106	95
North Carolina	82	84	105	84	83	91
North Dakota	129	119	119	108	107	111
Ohio	104	90	97	84	84	89
Oklahoma	118	111	119	103	97	107
Oregon	94	106	107	89	88	96
Pennsylvania	100	92	87	89	93	90
Rhode Island	75	83	83	83	96	95
South Carolina	82	95	106	89	87	92
South Dakota	106	115	120	107	105	111
Tennessee	83	86	107	87	82	91
Texas	128	117	119	108	103	111
Utah	95	88	100	85	82	90
Vermont	85	104	101	89	100	105
Virginia	85	93	104	106	105	102
Washington	115	128	100	92	90	96
West Virginia	132	89	91	73	72	78
Wisconsin	97	96	97	85	83	96
Wyoming	221	179	150	169	161	169
Index of geographic unevenness	100	41	80	38	36	20

[1] For each $1 per barrel of tax on oil, there would be an additional one cent per gallon tax on gasoline.

C. Competitive Questions

One issue that arises in analyzing energy consumption taxes is the extent to which they affect the competitive positions of industries which use different sources of energy, or the position of American industries versus foreign competition. For example, a tax on oil consumption or an oil import fee will raise the costs of industries who use oil as a fuel or feedstock relative to other industries which use natural gas, coal or other energy sources. While this will encourage the affected industries to conserve oil and convert to other fuels, it could cause dislocations to the firms who are unable to do this. Similarly, taxes which raise the price of energy to U.S. industries could hurt them relative to the foreign competitors who are not subject to these taxes. In the past, this has been mentioned as a particular problem in the petrochemical industry, which uses oil and gas as a feedstock and faces considerable competition from abroad. These competitive questions are one reason why some people have supported a gasoline tax, relatively little of which is used in industrial production.

D. Distributional Questions

One of the issues that arises in considering taxing energy consumption is the extent to which it will impose a disproportionate burden on lower income households. The data show that lower income households spend relatively more on the residential use of energy but relatively less on gasoline than middle and upper income households. Any adverse distributional effects of an energy tax, however, could be offset by appropriate adjustments to other tax rates in the context of a larger tax bill.

E. Macroeconomic Impact

Another issue in deciding whether an energy tax is desirable is its effect on the economy. Like many other excise taxes, an energy consumption tax can be expected to raise prices of the taxed items and, at least initially, to raise the overall price level. Also, a tax on oil could raise the price of competing fuels, like natural gas or coal. This would present a problem for the Federal Reserve System because, with higher consumer prices, people would want to hold more money. Unless the Fed accommodated this increased demand for money by increasing the money supply, the result would be higher interest rates. However, some argue that if the Fed increased the money supply to accommodate the higher energy prices, the result would be increased expectations of inflation, which would also lead to higher interest rates. It is also possible that higher energy prices could lead workers to demand higher wages and thereby exacerbate the wage-price spiral. To put these macroeconomic questions in perspective, it should be noted that in 1983 gross national product is expected to be $3.4 trillion, so that

an energy tax that raised prices by a total of $10 billion could be expected to have an initial impact on the price level amounting to no more than 0.3 percent.

There would be some favorable macroeconomic impacts of an energy tax. To the extent that it reduced oil imports, an energy tax could be expected to raise the value of the dollar relative to other currencies. This would put downward pressure on U.S. prices. Also, reduced dependence on oil imports would reduce the severe macroeconomic costs associated with disruptions of oil supply.

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